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Scientific Backgrounder: “Good for the Life”

Research Shows Probiotics Live Up to Their Name

Researchers are discovering more and more about how probiotics may provide health benefits by altering the internal microflora and improving intestinal function. Though benefits vary depending on the type of probiotic bacteria used and the amount consumed, experts agree that daily consumption of probiotics is most beneficial.

A Complex Ecosystem

The bacteria that live in the intestinal tract are called intestinal microflora. People are not born with this intestinal bacterial ecosystem in place; it begins to develop after birth and becomes more sophisticated once food is introduced. The character of the intestinal microflora is not constant and the types and number of bacteria are influenced by several factors, including stress, antibiotics, illness, aging and diet. Research suggests that when the intestinal microflora are out of balance (not enough friendly bacteria), overall health may be affected.

There are over 400 types of bacteria found in the gastrointestinal tract. People actually have about ten times the number of bacteria in their intestinal tracts as cells in their entire body (about 100 trillion bacteria cells total). Most of these bacteria are not harmful; in fact, some are beneficial and important for normal human growth and development. Some bacteria, however, can cause disease. Under normal circumstances, the “good” bacteria far outnumber the “bad.” Any shift in the balance of “good” to “bad” bacteria may affect how well the gastrointestinal tract functions.

The Function of Probiotics

When the intestinal microflora are in good balance, there are several potential health benefits (Shi et al., 2004). For example, there is evidence that some intestinal bacteria have the ability to manufacture vitamins. Normal, healthy intestinal microflora may also

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help strengthen the body's immune system. When the intestinal microfloral balance shifts in favor of beneficial microbes, the pH of the intestine tends to shift downward, creating a less desirable environment for pathogenic bacteria while promoting other health benefits. This is the result of an increase in the levels of lactic, butyric and acetic acids produced as the numbers of beneficial bacteria in the intestinal tract increase.

The microflora that occupy the lining of the intestinal tract also act as a physical barrier, partially blocking the passage of pathogenic bacteria and antigenic components of foods. Regular consumption of probiotic-containing products helps regulate the level of beneficial bacteria, reinforcing this barrier. When the microflora are unbalanced, intestinal functions are adversely affected.

Probiotics and intestinal disorders:

Constipation

Constipation is one of the most common gastrointestinal complaints in the United States; about 3 million people report being affected frequently. Research has shown that regular daily consumption of probiotic-enriched fermented dairy products may optimize the function of the gastrointestinal tract by shortening intestinal transit time, which improves regularity.

Colon Cancer

Colon cancer is the second most common cause of cancer death in the United States. Though many risk factors have been studied, including genetics and environmental factors, many researchers believe that interactions between diet, the intestinal microflora and the cells in the lining of the colon hold one of the keys to what causes colon cancer to develop. Unfavorable changes in the intestinal microflora, sometimes caused by changes in diet, may set the stage for the development of colon cancer. Regular, daily consumption of probiotics may help maintain a healthy intestinal microflora and promote a healthy environment.

Another theory for the cause of colon cancer is that prolonged exposure to cancer-causing compounds in the colon may trigger the process. Although the research is not conclusive and much further research is required, probiotics may be beneficial for several major intestinal functions. Animal and laboratory studies have reported the effect of probiotics on the formation of cancer-causing compounds in colon cells. In addition, some animal studies have explored probiotics' impact on the potentially harmful precancerous changes caused by a high-fat diet.

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Diarrhea

There are many causes of diarrhea, and bacterial and viral infections are among the most common. However, diarrhea often occurs when the intestinal microflora becomes unbalanced. This can happen temporarily, for example, when antibiotics are prescribed to fight an infection and “good” bacteria are destroyed along with the “bad.” Doctors suggested as far back as the early 20th century that live bacterial cultures, such as those used for the fermentation of dairy products, might restore the microfloral balance in the intestines. Although a direct connection between probiotics and effects on intestinal diarrhea hasn’t been established, and the exact mechanism for how probiotics may be beneficial to diarrhea sufferers still isn’t known, research in this area continues.

Inflammatory Bowel Disease (IBD)

More than 1 million people in the United States suffer from IBD, a painful and debilitating chronic inflammation of the digestive tract. The two most common forms of IBD are Crohn’s disease and ulcerative colitis. Studies have found higher than normal levels of “bad” bacteria in the intestinal tracts of people with IBD, and there is growing evidence that intestinal microflora play an important role in the development of IBD.

Irritable Bowel Syndrome (IBS)

IBS is a condition in which the muscle in the intestines does not function properly and the colon experiences heightened pain perception. It is typically characterized by gas, abdominal pain, and diarrhea or constipation or both. Some studies have shown that an imbalance of “good” and “bad” bacteria in the intestine may be an important factor in the development of symptoms for some people with IBS.

Immune Function and Natural Defense Systems

The body has its own natural defense mechanisms, which protect against invading bacteria and viruses. A major component of the body’s defense system is the immune function. About 70 percent of the body’s immune system is located in the digestive tract, where specialized cells play an important role as a first line of defense against invading bacteria. Research suggests that probiotics may have a beneficial impact on the intestinal microflora, the functioning of the intestinal lining and the regulation of critical components of the immune system, such as antibodies and natural killer cells.

The microflora that occupy the lining of the intestinal tract also act as a physical barrier. Regular consumption of probiotics helps regulate the level of “friendly” bacteria, reinforcing this barrier and maintaining intestinal health.

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Lactose Intolerance

Thirty million Americans are lactose intolerant; their bodies don't produce enough lactase, the enzyme needed to digest lactose, the natural sugar found in milk and other dairy products. Common symptoms of lactose intolerance include nausea, cramps, bloating, gas, and diarrhea, which may begin about 30 minutes to 2 hours after eating or drinking foods that contain lactose. Because of the probiotic bacteria they contain, fermented milk products, such as yogurt, can help decrease the symptoms of lactose intolerance. When present as live and active bacterial cultures in yogurt, probiotics reduce lactose content by "predigesting" some of the lactose, metabolizing it to lactic acid. The probiotic bacteria in yogurt that survive the trip to the intestinal tract may also provide additional lactase enzyme activity.

Other Benefits of Probiotics

Allergies, infections, reduction in blood cholesterol levels and control of high blood pressure are other areas currently being investigated for the potential health benefits of probiotics.

For more information, visit www.probioticscenter.com.

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